TECHNICAL DATA

DELSTAR® CO6 ALLOY

DELSTAR® COBALT-BASED ALLOYS consists of complex carbides in an alloy matrix. They are resistant to wear, galling, and corrosion and retain these properties at high temperatures. Their exceptional wear resistance is due mainly to the unique inherent characteristics of the hard carbide phase dispersed in a CoCr alloy matrix.

DELSTAR® CO6 is the most widely used of the wear resistant cobalt-based alloys and exhibits good all-round performance. It is regarded as the industry standard for general-purpose wear resistance applications, has excellent resistance to many forms of mechanical and chemical degradation over a wide temperature range, and retains a reasonable level of hardness up to 500°C (930°F). It also has good resistance to impact and cavitation erosion. DelStar® Co6 is ideally suited to a variety of hardfacing processes and can be turned with carbide tooling. Examples include valve seats and gates, pump shafts and bearings, erosion shields, and rolling couples. It is often used self-mated.

CORROSION RESISTANCE

The typical electrode potential in sea water at room temperature is -0.25V (SCE). Like stainless steels, DelStar® Co6 corrodes primarily by a pitting mechanism and not by general mass loss in seawater and chloride solutions. Its mass loss in sea water is below 0.05mm per year at 22˚C.

NOMINAL CHEMICAL COMPOSITION (MASS%)

ALLOY	Co	Cr	W	C	Others
DelStar® Co6	Bal.	28,0	4,5	1,2	Fe, Ni, Mo, Mn, Si

PHYSICAL PROPERTIES

ALLOY	Hardness	Density	Melting Range
DelStar® Co6	36 - 46 HRC / 380 - 490 HV	~ 8,44 g/cm^3	~ 1285 – 1410°C

NOMINAL HOT HARDNESS (HV resp. DPH) AS CAST

20°C	100°C	200°C	300°C	400°C	500°C	600°C	700°C	800°C	900°C
410	390	356	345	334	301	235	155	138	95

EXAMPLE FOR TENSILE PROPERTIES AT ROOM TEMPERATURE

PRODUCT FORM	Ultimate Tensile Strength Rm	Yield Stress Rp (0,2%)	Elongation A
Investment Casting, As cast	~ 790 MPa	~ 660 MPa	<< 1%

PRODUCT FORMS

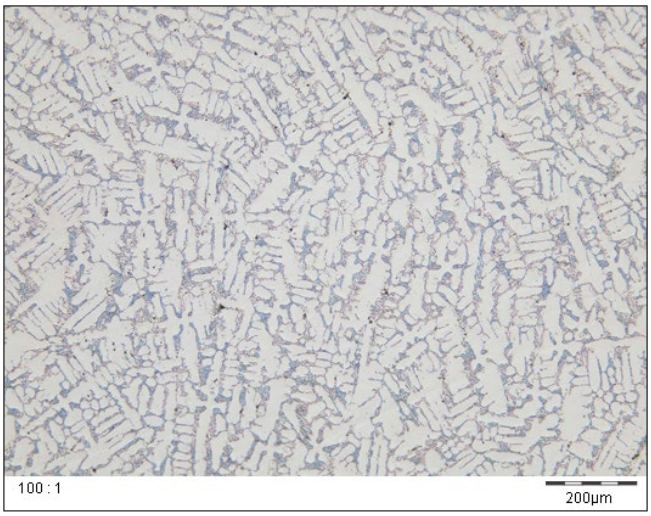
Components				
Castings	Cladded / Hardfaced	PM / HIP parts*	ALM parts*	Wrought**

* On special request.

** A separate brochure is available for the wrought forms of this alloy, namely Stellite™ 6B and Stellite™ 6K.

Consumables for Cladding / Hardfacing and Additive Layer Manufacturing (ALM)						
Rods	TIG-Welding			Oxy-Acetylene Welding		
Electrode	MMA Welding					
Cored Wire	MIG Welding			Submerged Arc Welding		
Powder	PTA Cladding	Laser Cladding	HVOF Spraying	Powder Welding	Spray&Fuse	ALM

TYPICAL STRUCTURES



Casted DelStar® Co6 Alloy (Resin Shell Casting)

Welded DelStar® Co6 Alloy (Plasma Powder Cladding)

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